



## Influenza early warning model based on Yunqi theory

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### Abstract:

**OBJECTIVE:** To establish an early warning model to simulate the outbreak of influenza based on weather conditions and Yunqi theory, an ancient calendar theory of Chinese medicine (CM). **METHODS:** Tianjin, a northeastern city in China, was chosen as the region of research and applied the influenza-like illness attack rate (ILI)% as the baseline and warning line to determine the severity of influenza epidemic. Then, an influenza early warning model was constructed based on the theory of rough set and support vector machines (RS-SVM), and the relationship between influenza and meteorology was explored through analyzing the monitoring data. **RESULTS:** The predictive performance of the model was good, which had achieved 81.8% accuracy when grouping the obtained data into three levels that represent no danger, danger of a light epidemic, and danger of a severe epidemic. The test results showed that if the host qi and guest qi were not balanced, this kind of situation was more likely to cause influenza outbreaks. **CONCLUSIONS:** The outbreak of influenza closely relates to temperature, humidity, visibility, and wind speed and is consistent with some part of CM doctrine. The result also indicates that there is some reasonable evidence in the Yunqi theory.

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### Resource Description

#### Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

#### Exposure :

weather or climate related pathway by which climate change affects health

Unspecified Exposure

#### Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

#### Geographic Location:

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resource focuses on specific location

Non-United States

**Non-United States:** Asia

**Asian Region/Country:** China

**Health Impact:** ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

**Infectious Disease:** Airborne Disease

**Airborne Disease:** Influenza

**Model/Methodology:** ☒

type of model used or methodology development is a focus of resource

Methodology

**Resource Type:** ☒

format or standard characteristic of resource

Research Article

**Timescale:** ☒

time period studied

Time Scale Unspecified